

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (previously presented) A method of altering modem transmission characteristics, comprising:

setting a modem to transmit on a first upstream channel on a first frequency using first transmission characteristics;

monitoring a quality of upstream transmissions from the modem on the first upstream channel; and

setting the modem to transmit on a second different upstream channel on a second different frequency using second transmission characteristics based on the monitored quality.

2. (previously presented) The method of claim 1, wherein setting the modem to transmit on a second different upstream channel further comprises:

determining whether the quality of the modem upstream transmissions is inadequate; and

setting the second transmission characteristics to more robust transmission characteristics based on the determination.

3. (previously presented) The method of claim 1, wherein setting the modem to transmit on a second different upstream channel further comprises:

determining whether the quality of the modem upstream transmissions is greater than a threshold; and

setting the second transmission characteristics to better performing transmission characteristics based on the determination.

4. (previously presented) The method of claim 2, wherein the first transmission characteristics comprise at least one of 16 quadrature amplitude modulation (16QAM), 8QAM, 32QAM or 64QAM, and the second transmission characteristics comprise quadrature phase shift keying (QPSK) modulation.
5. (previously presented) The method of claim 3, wherein the first transmission characteristics comprise quadrature phase shift keying (QPSK) modulation and the second transmission characteristics comprise at least one of 16 quadrature amplitude modulation (16QAM), 8QAM, 32QAM or 64QAM.
6. (previously presented) The method of claim 1, wherein the first upstream channel comprises a first time division of the first frequency.
7. (previously presented) The method of claim 6, wherein the second different upstream channel comprises a second time division of the second different frequency.
8. (previously presented) The method of claim 1, wherein the quality comprises at least one of bit-error-rate or signal-to-noise ratio.

9. (previously presented) A cable modem termination system, comprising:
- a memory configured to store instructions;
  - a communication interface configured to:
    - receive transmissions comprising first transmission characteristics from a modem on a first upstream channel on a first frequency, and
    - measure a quality of the received upstream transmissions from the modem; and
  - a processor configured to execute the instructions in the memory to:
    - monitor the measured quality of the received transmissions, and
    - send a message, via the communication interface, instructing the modem to transmit on a second different upstream channel on a second different frequency using second transmission characteristics based on the monitored quality.
10. (previously presented) The system of claim 9, the processor further configured to:
- determine whether the quality of the modem upstream transmissions is inadequate; and
  - set the second transmission characteristics to more robust transmission characteristics based on the determination.

11. (previously presented) The system of claim 9, the processor further configured to:

determine whether the quality of the modem upstream transmissions is greater than a threshold; and

set the second transmission characteristics to better performing transmission characteristics based on the determination.

12. (previously presented) The system of claim 10, wherein the first transmission characteristics comprise at least one of 16 quadrature amplitude modulation (16QAM), 8QAM, 32QAM or 64QAM, and the second transmission characteristics comprise quadrature phase shift keying (QPSK) modulation.

13. (previously presented) The system of claim 11, wherein the first transmission characteristics comprise quadrature phase shift keying (QPSK) modulation and the second transmission characteristics comprise at least one of 16 quadrature amplitude modulation (16QAM), 8QAM, 32QAM or 64QAM.

14. (previously presented) The system of claim 9, wherein the first upstream channel comprises a first time division of the first frequency.

15. (previously presented) The system of claim 14, wherein the second different upstream channel comprises a second time division of the second different frequency.

16. (previously presented) The system of claim 9, wherein the quality comprises at least one of bit-error-rate or signal-to-noise ratio.

17. (previously presented) A method of controlling transmission characteristics of cable modems, comprising:

monitoring upstream transmission quality of one or more cable modems; and  
commanding at least one of the one or more cable modems to change its transmission characteristics based on the monitored quality, including changing from a first preamble length to a second different preamble length.

18. (Original) The method of claim 17, further comprising:

commanding the at least one of the one or more cable modems to transmit on a different upstream virtual channel based on the monitored quality.

19. (Original) The method of claim 17, wherein commanding at least one of the one or more modems to change its transmission characteristics comprises:

commanding the at least one of the one or more modems to change its modulation based on the monitored quality.

20. (previously presented) The method of claim 19, wherein commanding the at least one of the one or more modems to change its modulation further comprises:

commanding the at least one of the one or more modems to change from quadrature phase shift keying (QPSK) modulation to at least one of 16 quadrature amplitude modulation (16QAM), 8QAM, 32QAM or 64QAM.

21. (previously presented) The method of claim 17, wherein the quality comprises at least one of bit-error-rate or signal-to-noise ratio.

22. (previously presented) A cable modem termination system, comprising:  
a memory configured to store instructions; and  
a processor configured to execute the instructions in the memory to:  
monitor upstream transmission quality of one or more cable modems, and  
instruct at least one of the one or more cable modems to change its transmission characteristics, including changing from a first time division multiplexed timeslot size to a second different time division multiplexed timeslot size, when the monitored quality meets a specified criteria.

23. (Original) The system of claim 22, further comprising:  
commanding the at least one of the one or more cable modems to transmit on a different upstream virtual channel when the monitored quality meets the specified criteria.

24. (Original) The system of claim 22, wherein commanding at least one of the one or more modems to change its transmission characteristics comprises:

commanding the at least one of the one or more modems to change its modulation when the monitored quality meets the specified criteria.

25. (previously presented) The system of claim 24, wherein commanding the at least one of the one or more modems to change its modulation further comprises:

commanding the at least one of the one or more modems to change from quadrature phase shift keying (QPSK) modulation to at least one of 16 quadrature amplitude modulation (16QAM), 8QAM, 32QAM or 64QAM.

26. (previously presented) The system of claim 22, wherein the quality comprises at least one of bit-error-rate or signal-to-noise ratio.

27. (currently amended) A method of changing transmission characteristics at a modem in a cable modem system, comprising:

transmitting, by the modem, on a first channel on a first frequency;  
receiving, by the modem, a command to select different upstream transmission characteristics;

selecting, by the modem, the different upstream transmission characteristics in accordance with the command; and

transmitting, by the modem, on a second different upstream channel on a second different frequency using the different upstream transmission characteristics.

28. (Original) The method of claim 27, further comprising:

receiving a plurality of messages, each message describing different transmission characteristics.

29. (previously presented) The method of claim 28, wherein the command indicates the use of one of the plurality of messages for selecting different upstream transmission characteristics.

30. (previously presented) A cable modem, comprising:

a memory configured to store instructions;

a communication interface configured to receive an instruction to select different upstream transmission characteristics; and

a processing unit configured to:

transmit on a first upstream channel on a first frequency,

select the different upstream transmission characteristics in accordance with the instruction, and

initiate transmission on a second different upstream channel on a second different frequency using the different upstream transmission characteristics.

31. (Original) The modem of claim 30, the communication interface further configured to:

receive a plurality of messages, each message describing different transmission characteristics.



32. (Original) The modem of claim 31, wherein the instruction indicates the use of one of the plurality of messages for selecting different upstream transmission characteristics.

33. (previously presented) A method of changing virtual upstream channels in a cable modem system, comprising:

monitoring upstream signal qualities associated with one or more cable modems;  
and

selectively switching at least one of the one or more cable modems between different virtual upstream channels with different frequencies based on the signal quality monitoring.

34. (Original) The method of claim 33, wherein each of the virtual upstream channels is associated with different cable modem transmission characteristics.

35. (Original) The method of claim 34, wherein a first of the different cable modem transmission characteristics comprises quadrature phase shift keying (QPSK) modulation.

36. (previously presented) The method of claim 35, wherein a second of the different cable modem transmission characteristics comprises at least one of 16 quadrature amplitude modulation (16QAM), 8QAM, 32QAM or 64QAM .

37. (previously presented) A cable modem termination system, comprising:
- a memory configured to store instructions;
  - a communication interface configured to:
    - measure signal qualities of upstream transmissions associated with one or more cable modems; and
  - a processor configured to execute the instructions in the memory to:
    - monitor the measured upstream signal qualities, and
    - selectively command at least one of the one or more cable modems to switch between different virtual upstream channels based on the signal quality monitoring.
38. (Original) The system of claim 37, wherein each of the virtual upstream channels is associated with different cable modem transmission characteristics.
39. (Original) The system of claim 38, wherein a first of the different cable modem transmission characteristics comprises quadrature phase shift keying (QPSK) modulation.
40. (previously presented) The system of claim 39, wherein a second of the different cable modem transmission characteristics comprises at least one of 16 quadrature amplitude modulation (16QAM), 8QAM, 32QAM or 64QAM.
41. (previously presented) A system for controlling transmission characteristics of a cable modem, comprising:

means for sending an upstream channel descriptor to one or more cable modems;

means for monitoring upstream transmission quality of the one or more cable modems; and

means for commanding at least one of the one or more cable modems to change its transmission characteristics, including changing from a first data block size to a second different data block size, based on the sent upstream channel descriptor and the monitored quality.